
An Overlooked New Species of *Habenaria* (Orchidaceae) from Central Brazil

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ABSTRACT. *Habenaria pabstii*, a new species (Orchideae, Orchidaceae) from the core region of the cerrado vegetation of central Brazil, is described and illustrated. The species has been collected since 1961, but was repeatedly misidentified as other taxa. The species is similar to those in section *Macroceratitae* Kraenzlin, but distinct by the shorter, forward-arched, free spur and the shorter, non-involute stigmas.

RESUMO. *Habenaria pabstii*, uma nova espécie (Orchideae, Orchidaceae) da região nuclear do cerrado do Brasil central é descrita e ilustrada. A espécie tem sido coletada desde 1961, mas foi repetidamente identificada erradamente. A espécie é similar àquelas da seção *Macroceratitae*, mas distinta pelo calcar mais curto, livre, projetado para frente e pelos estigmas mais curtos e não involutos.

Key words: Brazil, cerrado, *Habenaria*, Orchidaceae.

Habenaria Willdenow is the second-largest orchid genus in Brazil, with about 165 species according to the last major survey of Brazilian orchids (Pabst & Dungs, 1975). The genus is composed exclusively of terrestrial species and is typical of open grasslands. Most of the species have small, green, inconspicuous flowers that are of little interest to cultivators and thus rarely seen in cultivation. As a consequence, work on the genus has relied almost completely on botanical collections and on the study of dried material. The three major treatments of the genus for the country so far are those of Cogniaux (1893) in *Flora Brasiliensis*, Hoehne (1940) in *Flora Brasílica*, and Pabst and Dungs (1975, 1977) in *Orchidaceae Brasilienses*. The large number of species, the poor characterization or little information on many taxa, and the existence of several species complexes has given rise to a sit-

uation where identification of the species is often troublesome, with different names being applied to the same species and some species being overlooked.

The main center of diversity of *Habenaria* in Brazil is the cerrado. The cerrado is a species-rich savanna vegetation covering 2 million km² of central Brazil (Ratter et al., 1997). Among the *Habenaria* species-rich areas in central Brazil is the core region of the cerrado vegetation, including the Distrito Federal where 77 taxa are known (Batista & Bianchetti, 2003) and neighboring areas in the state of Goiás. In the course of a survey of the orchid flora of this cerrado region, several taxa of *Habenaria* have been collected that we have been unable to assign to any known New World species in the genus, one of which, with large and showy flowers, is hereby described as new.

Habenaria pabstii J. A. N. Batista & Bianchetti, sp. nov. TYPE: Brazil. Distrito Federal: Brasília, Fazenda Água Limpa (UnB), 15°57'S, 47°55'W, 1070 m, Córrego da Onça, 2 Feb. 1994, L. B. Bianchetti, J. A. N. Batista & B. M. T. Walter 1489 (holotype, CEN; isotypes, HB, K, MO, SP). Figures 1 and 2.

Habenaria pabstii florum generali aspectu speciebus sect. *Macroceratitae* similis sed calcar brevior, libero, frontaliter arcuato et stigmatibus brevioribus, non involutis differt. Etiam *H. urbaniana* similis sed floribus frequenter longioribus et structura columnae prominenti lobo mediano rostellii praedito appendicem similitudine cavernae formans, haec ultra antheras producta differt.

Terrestrial herb. *Tuber* basal, oblong to subspheric, 1.2–2.8 × 0.8–1.7 cm; *roots* ca. 1 mm wide, sparsely hairy, whitened; *stem* erect, leafy, 20–60 × 0.3–0.4 cm including the inflorescence. *Leaves* 7 to 11, the 3 or 4 lowermost sheath-like, the largest around the center of stem, (3)4 to 5(6), spread,

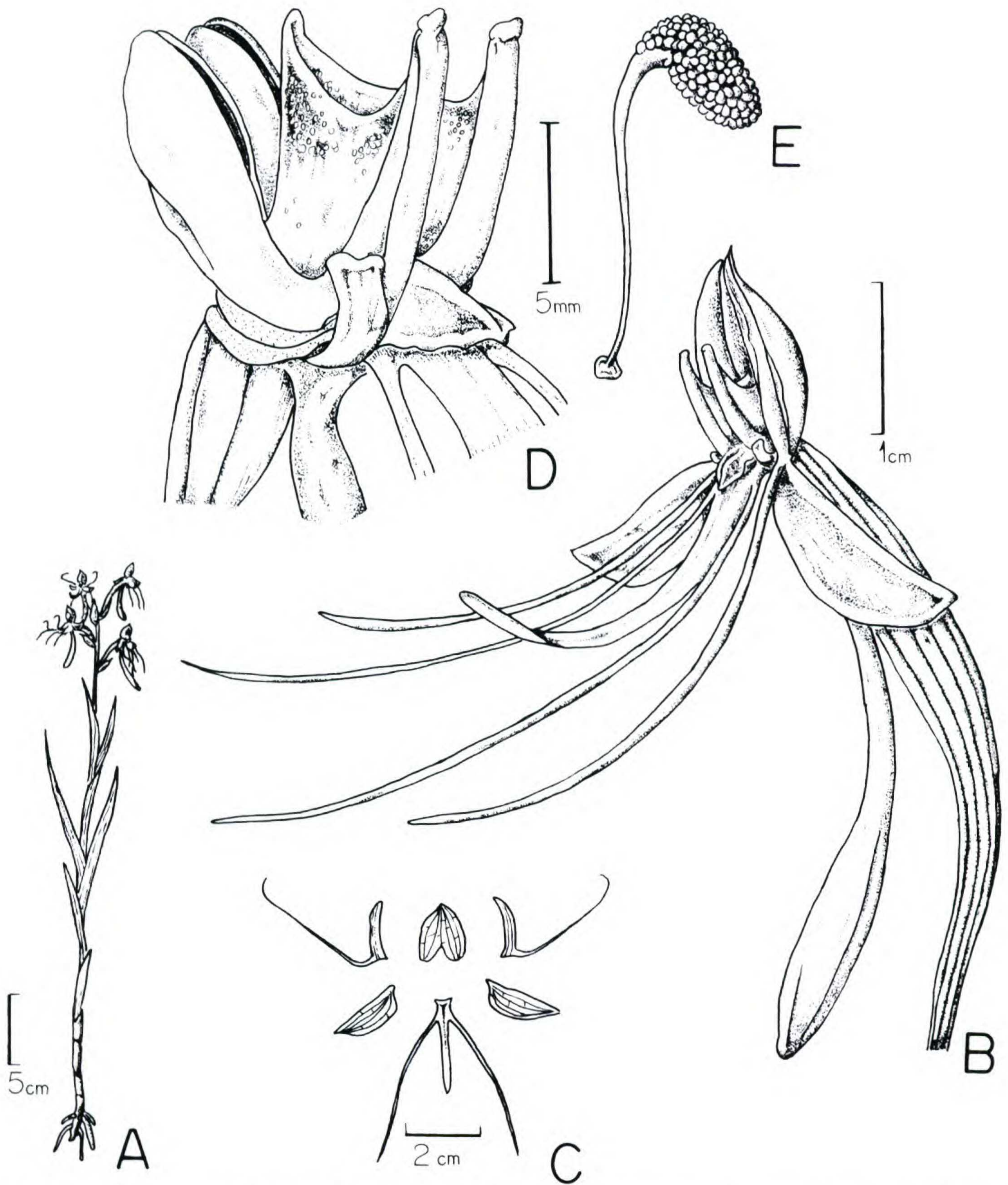


Figure 1. *Habenaria pabstii* Batista & Bianchetti. —A. Habit. —B. Flower, $\frac{3}{4}$ view. —C. Floral diagram. —D. Column, $\frac{3}{4}$ view. —E. Pollinaria. Drawn from the type collection, *Bianchetti et al. 1489*, by Eduardo Gonçalves.

linear-lanceolate, 11–21 \times 1–1.4 cm, acute, the 1(2) upper leaves decreasing in size and similar to the lower bracts. *Inflorescence* 5–10 cm long, few-flowered; bracts ovate-lanceolate, 1.8–3.1 \times 0.8–1 cm, caudate, the lowermost almost the same size as the pedicellate ovary, decreasing in size toward the apex of the inflorescence, green. *Flowers* 1(2) to 5(7), spreading, superimposed, large for the genus, green-white; pedicellate ovary, 2.5–3.5 cm long,

slightly arched, green; sepals mucronate, light green with the margins whitened, the veins slightly marked in darker green; dorsal sepal concave, when flattened somewhat elliptic, 12–16 \times 8–13 mm; lateral sepals obliquely oblong, 16–20 \times 4.5–6.5 mm, acute, deflexed in fully open flowers; petals bipartite, base white or creamy white, green toward the apex; posterior segment linear-falcate, 13–15 \times 2–3 mm, acute, base free, toward the apex

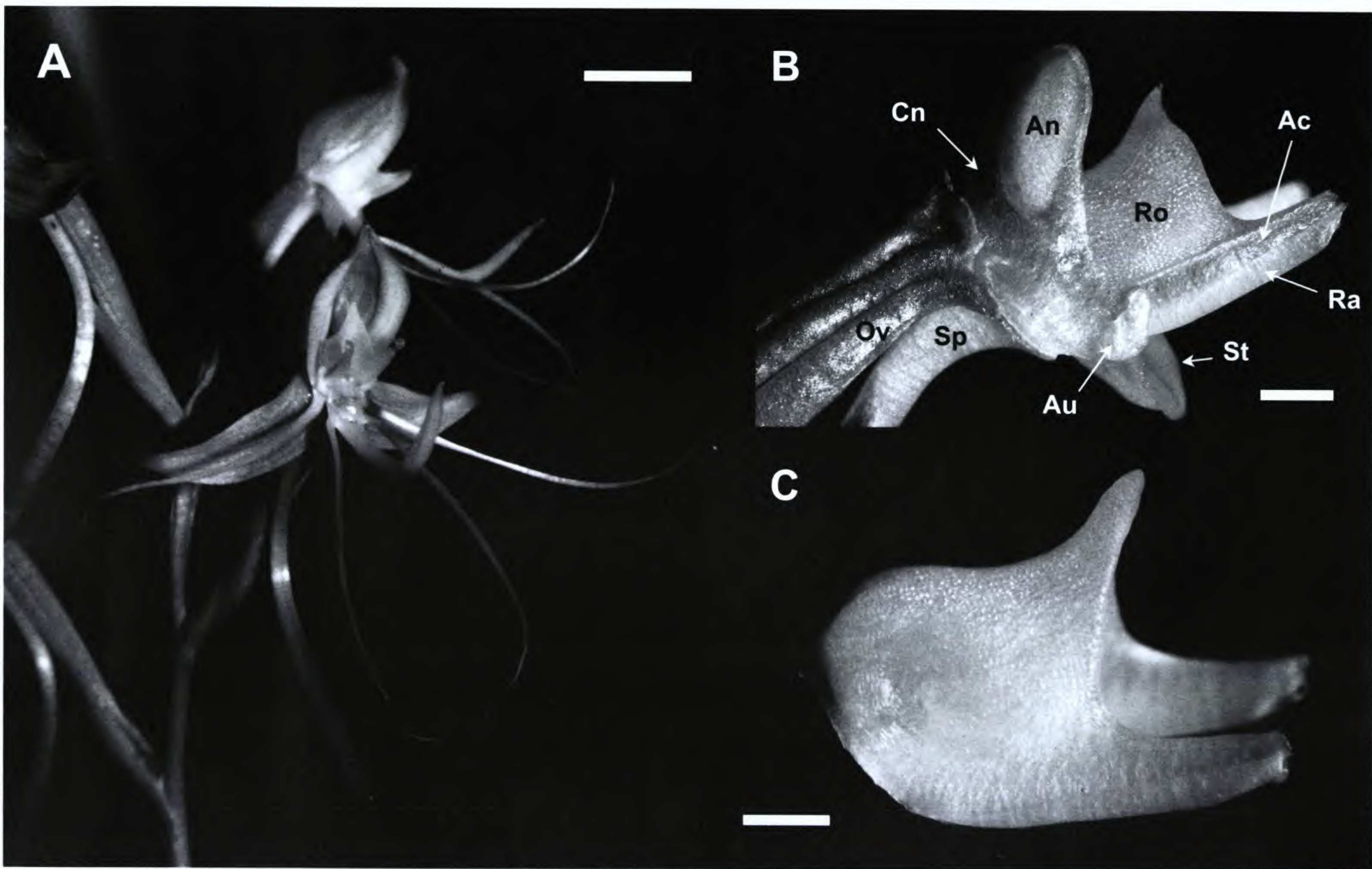


Figure 2. *Habenaria pabstii* Batista & Bianchetti. —A. Flower, $\frac{3}{4}$ view. —B. Column, side view, with the pollinaria removed; An, anther; Ac, anther canal; Au, auricle; Cn, connective; Ro, rostellum; Ra, rostellum arm; St, stigmas; Sp, spur; Ov, ovary. —C. Rostellum, side view. Scale bars = 1 cm (A) and 2 mm (B, C). Photographed from living specimens from the same collection as *Batista 185*.

connivent with the dorsal sepal; anterior segment linear-filiform, 25–43 mm long, 2–2.5(2.8) times longer than the posterior segment, projected forward and somewhat parallel to the lateral lip segments; lip tripartite, projected forward, base white or creamy white and light green toward the apex of the segments; undivided base 2–3 × 2–3 mm; lateral segments linear-filiform, 32–51 mm long, 1.7–2.3 times longer than the medium segment; medium segment shorter and wider, linear-ligulate, 17–24 × 1.5(2) mm, the apex bent upward; spur pendent, clavate, free from the bracts, slightly to strongly arched forward, narrower at the base, progressively thickened toward the apex, 3.3–3.8 cm long, base 1.5 mm wide, apex 2.5–3 mm wide, green; column 6–10 mm high; anthers ca. 4–6 mm tall, white-yellow; anther canals 7–9 mm long, slender, erect, somewhat perpendicular to the anthers; connective emarginate, green; rostellum mid lobe prominent, elongate, forming a tunnel-like structure projected beyond the anthers, ca. 10–11 mm long including the lateral arms, 6–7 mm tall at the apex, fleshy, cuspidate, acute, light green, the base white, slightly bent, forming a discrete groove that extends through the lateral arms and which supports the anther canals; rostellum arms white, 3–4 mm long; auricles erect, ca. 2.5–3 mm tall, fleshy, flattened, verrucose toward the apex, white; stigmas 2, closely parallel, 6–8 mm long including the base, the receptive, exposed surface 3–4 mm long and 2–2.5 mm wide, projected forward, non-involute, upper surface flatly convex, light green; pollinaria 2, yellow, viscidium ca. 1 × 1 mm, spaced 3–5 mm apart; caudicles elongate, 8–10 mm long, about 2–3 mm from the apex, ca. 90° bent; pollinia 4, 3–4 × 1–1.3 mm, laterally flattened, perpendicular to the caudicles main axis. *Fruit* not examined.

Etymology. The new species is named in honor of Guido F. J. Pabst (1914–1980), the late well-known Brazilian orchidologist, author of *Orchidaceae Brasilienses*, who greatly contributed to the knowledge of the orchid flora of central Brazil and who described some new species of *Habenaria*.

Distribution. *Habenaria pabstii* is an occasional species, so far only known from the Distrito Federal and the state of Goiás. It should also be expected in western Minas Gerais, which is floristically related to this core cerrado region, which shares many orchid species in common with the Distrito Federal and Goiás, and probably also in southern Tocantins state, which is close to the known range of the new species.

Habitat, ecology, and phenology. *Habenaria pabstii* is more commonly found in seasonally wet

grassy fields, in either hydromorphic or sandy soils. Occasionally, it can also be found growing under drier conditions or, rarely, in permanently wet ground with water at the surface. Like most *Habenaria* species in central Brazil, flowering occurs during the rainy season, from December to late March, extending from the peak to almost the end of the rainy season. Plants frequently appear in great numbers, with apparently only the older and more developed individuals flowering among many still growing younger plants. The flowers usually do not last more than a few days in the field (pers. obs.). Also, like many other *Habenaria* and terrestrial orchids from open grasslands, the flowering of this species is greatly enhanced by bushfires (Jones, 1993; Oliveira et al., 1996). The greatest concentration of flowering plants is usually found in burnt areas, though occasionally some plants can also be found in flower in unburnt places (pers. obs.). The pollination mechanism and pollinators of the species are unknown.

Habenaria pabstii was apparently first collected by Ezechias P. Heringer in 1961 in the Distrito Federal. Analysis of dried specimens collected at that time and examined by Guido F. J. Pabst has revealed that Pabst misidentified the species as *H. fastor* Warming, *H. candolleana* Cogniaux, *H. urbaniana* Cogniaux, and *H. vaupellii* Reichenbach fil. & Warming. These mistakes probably avoided the identification of *H. pabstii* as a new species in the past.

Among Brazilian *Habenaria*, *H. pabstii* is mostly similar in general flower morphology and size to a species group within section *Macroceratitae*, represented by *H. bractescens* Lindley, *H. fastor* Warming, *H. gourlieana* Gillies ex Lindley, *H. johannensis* Barbosa Rodrigues, *H. longicauda* Hooker, and *H. macronectar* (Vellozo) Hoehne, hence prior Pabst identifications as *H. fastor* and *H. vaupellii* (a synonym of *H. johannensis*). However, distinct from all these species, *H. pabstii* has a shorter, forward-arched free spur (Figs. 1B, 2A) and shorter, non-involute stigmas, which are closely parallel forming a single receptive surface turned up and forward (Figs. 1D, 2B). All these other species have pendent spurs, which are completely or partially enclosed by the bracts and which are longer than the ovary and pedicel, ranging from 4 to more than 15 cm, and reaching up to 25 cm in *H. longicauda* (Snoverink & Westra, 1983). Also, their stigmas are always longer (the free part 6–9 mm long in other species with similar flower size), separated and in contact only at the apex, the margins are involute, that is, rolled inward spirally on each side (Stearn, 1983), and the receptive surface at the apex is

mostly turned to the sides. Thus, though *H. pabstii* undoubtedly shares some degree of similarity with these species, it differs in some important details of the column structure, and its exact infrageneric classification is unclear. As current infrageneric classification of *Habenaria* needs a radical reassessment (Pridgeon et al., 2001), further studies, including a molecular analysis, will be necessary to clarify the relationship between *H. pabstii*, the species in section *Macroceratitae*, and other species in the genus.

Among other species in section *Macroceratitae*, *Habenaria pabstii* is also similar in general flower morphology to *H. quinqueseta* (Michaux) A. Eaton. However, this species has the leaves more patent, ovate to lanceolate and broader (2–6 cm wide); petals and lip white; a longer, pendent spur (5–10 cm long, reaching up to 18 cm in *H. quinqueseta* var. *macroceratitis* (Willdenow) Luer); and the rostellum mid lobe smaller, completely placed between the anther sacs (Luer, 1972; Correll, 1978). Additionally, *H. quinqueseta* has a distinct distribution, occurring in southern North America, Central America, the Antilles, and northern South America, and has never been recorded and is not known to occur in Brazil.

Beyond the species in section *Macroceratitae*, the only other Brazilian species to which *Habenaria pabstii* is similar and could be confused is *H. urbaniana* (sect. *Nudae* Cogniaux). Both species are similar in the large flowers and long and filiform lateral segments of the petals and lip. However *H. urbaniana* is vegetatively taller (86–122 cm high), has lanceolate leaves up to 2 cm wide; a longer (12–19 cm) and many-flowered inflorescence ((6)12 to 25 flowers) with overall smaller flowers with proportionally less developed anterior petals (petals anterior segment 19–33 mm long, 1.6–1.9 times longer than the posterior segment); a shorter floral spur (ca. 2–2.5 cm), which at most equals the ovary plus its pedicel in length, and prominently broadened at the apex (1 mm wide at the base, 3–4 mm wide in the apex). Additionally, the column structure of both species is very different, with the middle lobe of the rostellum of *H. urbaniana* smaller (about 1.5 mm long and 2 mm tall), triangular, and completely enclosed by the anthers. Lastly, plants of *H. pabstii* became black when dried or preserved in ethanol, while those of *H. urbaniana* and the species in section *Macroceratitae* became brown. The identification as *H. candolleana* is unwarranted since this species has much smaller flowers (dorsal sepal and lip lateral segments 6–8 mm long), and a very distinct column structure.

In column structure, mainly in relation to the

rostellum morphology, *Habenaria pabstii* is very similar to *H. johannensis*. In both species, the rostellum mid lobe forms a prominent tunnel-like structure, which is partially erect and projected beyond the anthers (Fig. 2B, 2C). Despite this morphological similarity, it is not known, and would be interesting to investigate, whether both species share any similarities in their mechanisms of pollination.

Paratypes. BRAZIL. **Distrito Federal:** Gama, Saia Velha, 22 Mar. 1961, *Heringer 8123* (AMES, HB, NY); Sobradinho, Paranozinho stream, 9 Jan. 1966, *Irwin et al. 11505* (HB, NY, UB); Núcleo Bandeirante, Vargem Bonita, 5 Feb. 1966, *Irwin et al. 12301* (HB, NY); Núcleo Bandeirante, Mansões Setor Park Way, 14 Jan. 1996, *Batista & Oliveira 585* (CEN); Brasília, University of Brasília farm, 5 Jan. 1989, *Bianchetti & Salles 743* (CEN); Brasília, Setor de Mansões do Lago Norte, 14 Jan. 1992, *Batista 231* (CEN); Brasília, near Colorado gas station, 10 Feb. 1991, *Batista 185* (CEN); Brasília, Lago Sul, QI-17, 16 Feb. 1995, *Oliveira 93* (UB). **Goiás:** Mun. Alto Paraíso, Chapada dos Veadeiros, 9 Feb. 1966, *Irwin et al. 12382* (HB, NY, UB); 20 km N of Alto Paraíso, 1250 m, 19 Mar. 1971, *Irwin et al. 32181* (HB, NY, UB); GO-118, ca. 26 km N of Alto Paraíso, 13°58'S, 47°27'W, 8 Feb. 1987, *Pirani et al. 1889* (SPF); Alto Paraíso/Colinas do Sul, ca. 3 km of GO-118, 1200 m, 14°09'22"S, 47°32'43"W, 27 Jan. 1997, *Walter et al. 3636* (CEN); Corumbá de Goiás, 14 Jan. 1968, *Irwin et al. 18598* (HB, NY, UB); Caldas Novas, 12 Jan. 1981, *Menezes in CFCR 642* (SP, SPF); Pirenópolis, Santuário Ecológico do Morro do Cabeludo, 22 Jan. 1995, *Batista 504* (CEN); Minaçu, 29 Jan. 1997, *Assis et al. 404* (CEN, SPF); Mun. Cavalcante, ca. 17 km SO of Cavalcante, 8 Jan. 2001, *Batista & Pansarin 1137* (CEN, UEC).

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